

Abstract of the Disclosure

5 In a semiconductor device using a polysilicon contact, such as a poly plug
between a transistor and a capacitor in a container cell, an interface is provided where the
poly plug would otherwise contact the bottom plate of the capacitor. The interface bars
silicon from the plug from diffusing into the capacitor's dielectric. The interface can also
include an oxygen barrier to prevent the poly plug from oxidizing during processing.

10 Below the interface is a silicide layer to help enhance electrical contact with the poly
plug. In a preferred method, the interface is created by selectively depositing a layer of
titanium over a recessed poly plug to the exclusion of the surrounding oxide. The
deposition process allows for silicidation of the titanium. The top half of the titanium
silicide is then nitridized. A conformal ruthenium or ruthenium oxide layer is

15 subsequently deposited, covering the titanium nitride and lining the sides and bottom of
the container cell.